

FIG. 1



FIG. 4 is a block diagram of a system 400 for adaptive equalization. The system 400 includes a delay element 402, a non-adaptive T/N-spaced equalizer 408, a carrier phase recovery unit 410, an adaptive T/N-spaced equalizer 406, and a RAM (equalizer weights) 412. The system 400 is controlled by a SELECT signal 430. The input signal i1 is split into two paths. One path goes through the delay element 402 to produce i6, which is then multiplied by i5 in a multiplier 404 to produce z1. The other path goes through the non-adaptive T/N-spaced equalizer 408 to produce i2, which is then processed by the carrier phase recovery unit 410 to produce i5. The output of the adaptive T/N-spaced equalizer 406 is i7, which is fed back into the RAM 412 to update the equalizer weights. The output of the system 400 is i7, which is also labeled as 422.

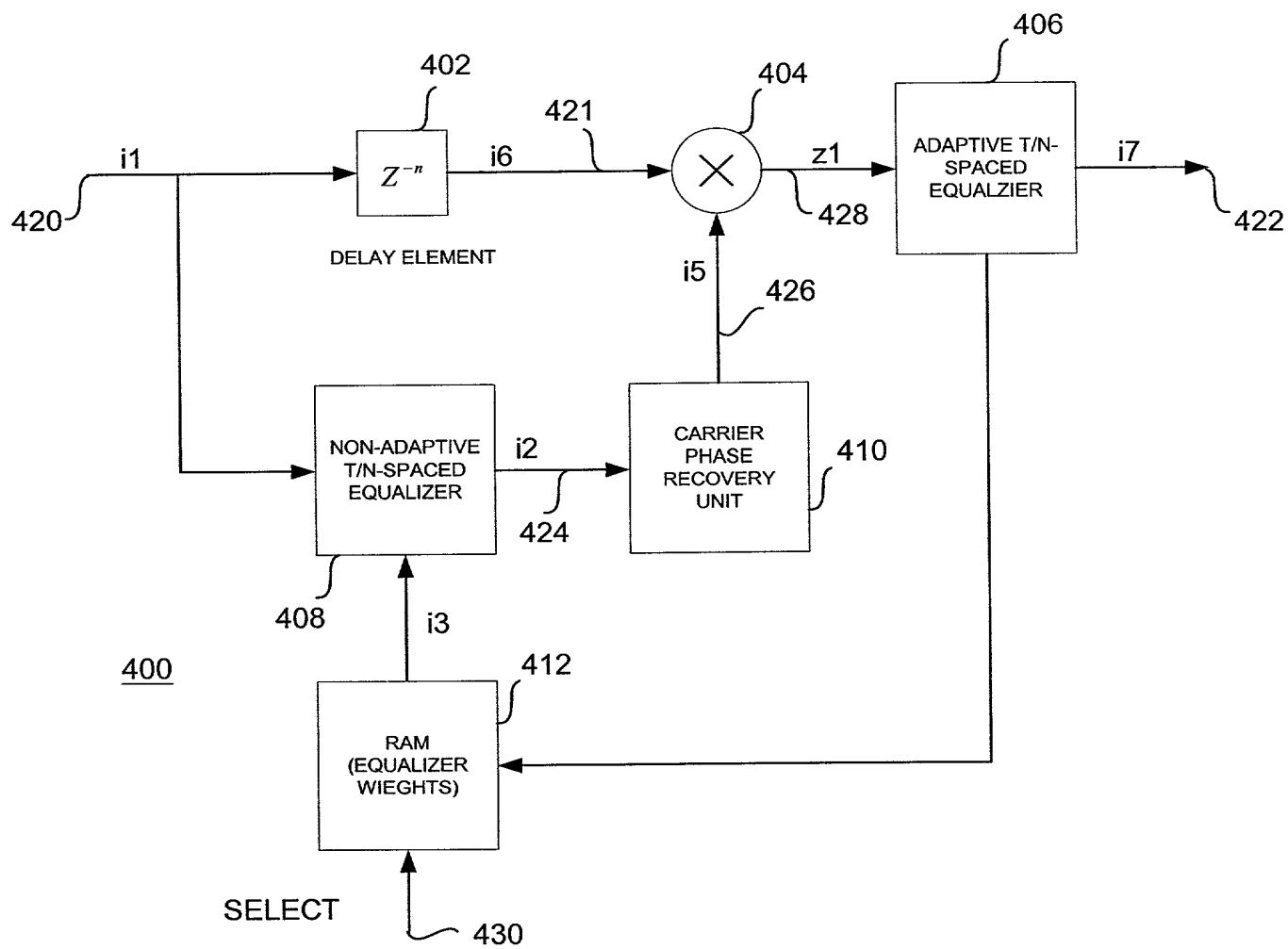


FIG. 4

FIG. 5 is a block diagram of a carrier phase estimation system. The system is divided into two main sections: Pilot-Aided Based Carrier Phase Estimation (top) and Data-Aided Based Carrier Phase Estimation (bottom). The Pilot-Aided section (500) takes a signal 424 and extracts pilot components P1 and P2 (506). P1 is added to a feedback signal (508) and then processed by a tan-1() CORDIC Algorithm (510) to produce z5. P2 is added to a feedback signal (512) and then processed by a Table Look Up (514) to produce z8. z5 and z8 are combined in a Complex Conjugate block (516) to produce z9. The Data-Aided section (504) takes the signal 424 and delays it by z-D (520) to produce z10. z10 is multiplied by z9 (522) to produce z11. z11 is processed by an M-QAM Slicer (524) to produce z12. z12 is combined with a feedback signal (526) in a Complex Conjugate block (528) to produce z13. z13 is multiplied by z10 (530) to produce z14. z14 is added to a feedback signal (532) in a summing junction (534) to produce z15. z15 is processed by a CORDIC block (536) to produce z17. z17 is processed by a Table Look Up (538) to produce z18. z18 is combined with a feedback signal (540) in a Complex Conjugate block (542) to produce z19. The output of z19 is fed back to the input of the Pilot-Aided section (500) and the Data-Aided section (504).

FIG. 5

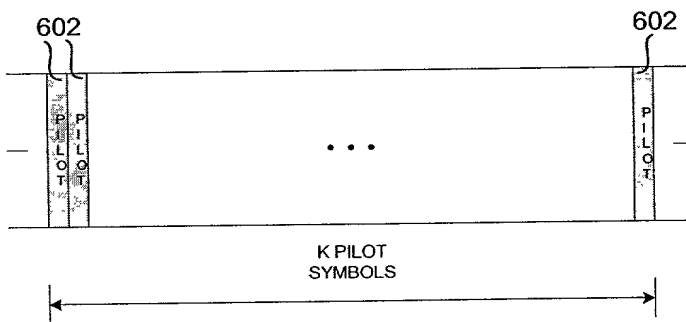
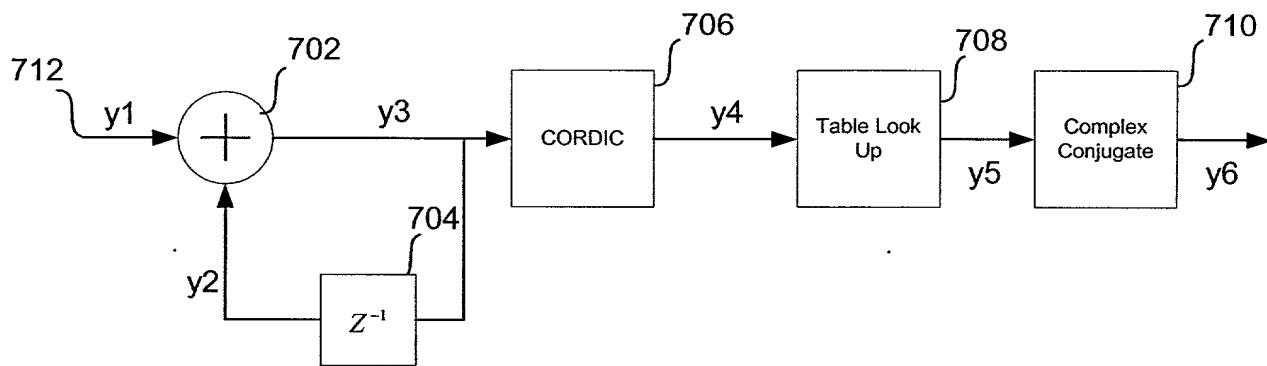


FIG. 6



700

FIG. 7